

EXHIBIT B

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF ALABAMA
SOUTHERN DIVISION

Alabama Gas Corporation,)	
Plaintiff,)	
v.)	CIVIL ACTION NO.:
)	2:10-cv-1840-IPJ
Travelers Casualty and Surety)	
Company, <i>et al.</i> ,)	
Defendants.)	
_____)	

Expert Report of Dennis Unites

Counsel for Plaintiff, Alabama Gas Corporation (ALAGASCO) has asked me to provide a written report of my opinions in the above referenced lawsuit, along with the basis and reasons for my opinions. This report contains that information, as well as the additional information required by Rule 26(a)(2)(B) of the Federal Rules of Civil Procedures.

I. Statement of the Opinions to be Expressed

It is my opinion that the origin of the hazardous substances which lead the United States Environmental Protection Agency (USEPA) to order ALAGASCO to perform a Time Critical Removal Action at the former Huntsville Manufactured Gas Plant (the Huntsville Site) was the historic operation of the Manufactured Gas Plant (MGP). The hazardous substances at the Huntsville Site, more likely than not, initially came to be located in the environment as the result of incidental spills, leaks, and minor releases over time. There is no indication of intentional disposal of hazardous substances during the operation of the Huntsville MGP or its dismantling.

In my opinion, the Huntsville MGP operated from prior to 1887 until 1949. During MGP operations, the physical plant on the Huntsville Site included: a gas house, where the gas was made; two gas holders for storage of gas; a purifier house, where sulfur was removed from the gas; a coal shed; and various tanks for the storage of tars and oils.

It is my opinion the MGP facilities were demolished over a period of time. Following the conversion to propane air, many of the fixtures used in the manufactured gas process would have been rendered obsolete. Based on aerial photographs, the gas holders were demolished sometime between January 1946 and February 1950. The coal shed and the gas house were taken down between February 1950 and February 1954. Based on observations during the removal action, it appears debris from the coal shed and other brick structures was used as fill material within the below grade portion of the former holders. The purifier house was taken down sometime between January 1967 and December 1970 and the Huntsville Site was regraded for the construction of Searcy Homes. In my opinion, demolition, regrading, and construction, in conjunction with the redevelopment of the Huntsville Site for Searcy Homes, between 1969 and 1970, would have inevitably caused redistribution and spreading of the hazardous substances.

It is my opinion USEPA ordered ALAGASCO to perform a Time Critical Removal Action because hazardous substances from the former MGP posed an unacceptable level of risk due to the residential use of the Huntsville Site. It is my opinion that, but for the conversion of the Huntsville Site from commercial/industrial use to residential use in 1969-1971, the Huntsville Site would not have been subject to a Time Critical Removal Action on the part of USEPA or the Alabama Department of Environmental Management (ADEM).

II. Basis and Reasons for the Opinions to be Expressed

a. Background

On October 19, 2009, the USEPA entered into an Administrative Settlement Agreement and Order on Consent for Removal Action, dated November 24, 2009

with ALAGASCO and the Huntsville Housing Authority to perform a Time Critical Removal Action at the Huntsville Site. USEPA's documents make clear that its action was sparked by the residential use of the Huntsville Site. Testing performed by USEPA and ADEM demonstrated that chemicals associated with gas manufacture and, in particular, certain carcinogenic Polycyclic Aromatic Hydrocarbons (cPAH) were present in the surface and subsurface soils at concentrations above Removal Action Levels (RAL) established by the USEPAⁱ. The USEPA also noted that, because the area was residential, children playing in the area would be exposed to the contaminated soil. Some concern was also noted by USEPA because the Huntsville Site is a center of activity for a local Boy Scout troop including a garden in the area of impactⁱⁱ. USEPA considered ALAGASCO liable because it and its predecessors had operated the MGP from at least 1918 to 1949 and were therefore considered owners or operators at the time of disposal under CERCLAⁱⁱⁱ.

b. Huntsville Site History

The Huntsville Manufactured Gas Plant (Huntsville MGP), located in the vicinity of 414-424 Dallas Avenue NW, Huntsville, Madison County, Alabama, was constructed some time prior to 1887. It produced between 10 and 30 million cubic feet of gas per year using both a coal carbonization process and a carbureted water gas process^{iv}. In 1946, gas production was switched to a propane air process which operated until production ceased totally in 1950^v. On December 30, 1949, the property was sold by ALAGASCO to the City of Huntsville^{vi} which used it for propane air gas production for a short time. In the propane air process, propane gas is blended with air to produce a gas having a thermal content of approximately 550 BTU, similar to that of manufactured gas. The process produces no residual waste products. The Site was also used for the storage of construction materials from 1950 to 1967. In 1967, the property was sold by the City of Huntsville to the Huntsville Housing Authority. Between 1967 and December 1970, the remaining MGP structures were demolished and Searcy Homes, the Huntsville Housing Authority development, was constructed. Searcy Homes was open to residents in 1971.

c. MGP Operations

Manufactured gas was used in the United States from 1816 until the mid 1950's. At first, it was used primarily for illumination, both on public thoroughfares and in homes. Later uses included refrigeration, cooking and heating. According to Browns' Directories, two processes were used at Huntsville for most of the plant's history. Coal gas was the first process employed. Generally speaking, in this process, coal was sealed into ceramic retorts and heated to a temperature of approximately 2,000 degrees Fahrenheit. The gas that was distilled off of the coal passed through a water seal, then through condensers where tar and oils were removed from the gas stream. The gas then passed through iron oxide impregnated wood chips in purifiers where sulfur was removed. The cleaned gas was then stored in a water sealed gas holder until it was sent into the city mains. As several retorts could be heated at the same time, the coal gas process was relatively continuous. Tars, oils and coke were the byproducts of the process. Waste products consisted of ash from heating of the retorts and spent purifier material which contained high amounts of sulfur and some levels of cyanide. Although comparatively little is known about the specific operations of the Huntsville MGP, I have seen no indication that the process departed materially from typical MGP operations.

The water gas process was installed in Huntsville in the 1900's and was operated intermittently until the 1930's. Generally speaking, the water gas process involved a cyclic process where steam was passed through a bed of hot coke or coal. The resulting gas, a mixture of hydrogen and carbon monoxide, then passed into the carburetor where oil was injected into it. The gas then passed through a superheater where it was "fixed", the oil being broken down into smaller gaseous compounds. The gas stream then passed into a relief holder where it was cooled and stored for further cleaning. The gas then passed through various scrubbers and purifiers and was ultimately stored in the distribution holder. Tars and oils were by-products of the process and ash, clinker, and purifier wastes were the solid wastes^{vii}. Again, I have seen no indication that the water gas process at the Huntsville MGP departed materially from typical MGP operations.

Sanborn Maps show that during plant operations, the physical plant consisted of: a gas house, which housed the coal gas retorts and carbureted water gas generator; a purifier house, for the sulfur removal equipment; a coal shed adjacent to the gas house; and two water sealed gas holders which were constructed with below grade masonry tanks. The smaller of these two holders was the relief holder which received raw gas from the retorts or generator. The larger holder was the distribution holder, storing gas for distribution to the system. Several tanks for the storage of tars and oils were also present. A set of high pressure horizontal tanks was added late in the plant's history.

Demolition of the former gas equipment located at the Huntsville Site proceeded over a number of years. The gas holders were taken down and the holder pits filled sometime between January 1, 1946 and February 26, 1950. The duration of this period is based on the Browns Directory report that the system had switched to propane air and the presence of high pressure tanks in the 1950 aerial photograph. The photograph also shows that the above-grade portion of the holders had been removed.

The generator house and other plant structures were razed between February 26, 1950 and February 6, 1954, based on a review of the aerial photographs of those dates. The purifier house remained standing in January of 1967 as it was shown in a property assessment photograph of that date. It was demolished sometime between March 1968 and December 1970 as an aerial photograph for the later time shows the Huntsville Site essentially in its current configuration.

The tars and oils produced as by-products of these operations give rise to the environmental concerns surrounding MGPs. While these by-products were often sold as a chemical feed stock or used directly for paving or wood preservation, spills and leaks from various pieces of equipment, tanks and associated piping at the plant resulted in their release into the soils and ground water. These tars and oils were mixtures of volatile organic compounds, i.e., benzene, xylene, and toluene, and heavier Polycyclic Aromatic Hydrocarbons (PAHs) such as Benzo(a)Pyrene and naphthalene. Most or all of these compounds are identified as hazardous substances under CERCLA^{viii} and some are known or suspected carcinogens.

d. USEPA and MGPs

The USEPA has maintained a special interest in MGPs as a class of potentially contaminated sites since the early days of the Superfund program. Two MGP sites were among the first 115 sites on the original National Priorities List (NPL) in 1981^{ix}. The listed sites were considered to have the highest priority for clean up. Other MGPs have subsequently been added to the NPL.

In 1985, a study performed for USEPA by the Radian Corporation estimated that there were over 3,000 MGPs around the United States. Primarily because of the potential contamination by tars and oils, USEPA has actively sought to conduct Preliminary Assessments at all MGP sites to determine if further action is warranted. Although it was listed in the aforementioned Radian Report, the Huntsville Site was “discovered by USEPA and ADEM in 2002” as part of the joint evaluation of MGP sites by USEPA and state agencies^x. The Huntsville Site is the only Alabama MGP to be the subject of a USEPA order for response action.

e. ADEM Involvement with MGPs

In contrast with USEPA’s activities at a national level, ADEM does not appear to consider MGPs to be high priority sites. Of the approximately 14 Alabama towns having MGPs, ADEM has not issued any orders for cleanup. Two MGP sites in Alabama have undergone voluntary actions as part of site redevelopment. These former MGP sites are located in Talladega and Montgomery. A third site is currently undergoing investigation in Mobile.

f. USEPA and ADEM Actions at the Huntsville MGP

In May of 2001, ALAGASCO made a presentation to ADEM identifying the location and history of the Huntsville MGP Site as well as other MGP sites in Alabama that may have been operated by ALAGASCO or its predecessors.

On February 27-29, 2003, ADEM conducted an assessment of the Huntsville Site and the surrounding area. No samples were collected and a report was issued on

May 2, 2003 that identified the Huntsville Site as a low priority for further assessment^{xi}.

On August 31-September 2, 2004, ADEM conducted a soil and ground water sampling program on the Huntsville Site. Four temporary ground water sampling wells were installed. Based on this data, ADEM concluded that the ground water conditions did not present a significant threat to human health.

During this investigation, ADEM collected ten surface soil samples and drilled four borings. Metals were detected above ADEM's screening levels in the surface soils and numerous PAHs were noted in the subsurface soils collected from the borings^{xii}. ADEM felt the results indicated the need for additional sampling of the surface and subsurface soils to better evaluate the air and surface soil pathways for human exposure^{xiii}. The Huntsville Site was again identified as having a low priority for further assessment^{xiv}.

As a result of the 2006 investigation and the need to better evaluate the air and surface soil pathway, ADEM conducted an Expanded Site Investigation in 2007. Borings were drilled to a depth of 132 individual locations. The samples were composited and analyzed as one sample. ADEM found that: "...the 2007 ESI indicate the presence of three metals, cyanide and fourteen organic compounds above each chemical's human contact risk value. ADEM recommend (sic) further action at the Federal level concerning this (the Huntsville) site."^{xv}

USEPA contractors conducted two rounds of Removal Site Evaluation sampling in 2008, the first from April 28 to May 2. The second round of samples was collected on August 28, 2008. A total of 3 sediment samples, 8 composite surface samples and 41 subsurface samples were collected and analyzed for select metals and PAHs. These tests demonstrated that chemicals associated with gas manufacture and, in particular, certain cPAHs were found in the soil at concentrations above Removal Action Levels (RAL) established by the USEPA. The USEPA also noted that, because the area was residential, children playing in the area would be exposed to the contaminated soil. Some concern was also noted because the local Boy Scout troop's activities centered on the Huntsville Site, including a garden on the impacted area^{xvi}.

At the end of its investigation USEPA concluded:

“...Site conditions meet the requirements for initiating a time-critical removal action according to criteria listed in Section 300.415 (b)(2) of the NCP:

- **Section 300.415(b)(2)(i):** *“Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;”* Sample analysis has shown that cPAHs exist in surface and subsurface soils (up to at least 24” bgs) at concentrations above established RALs. Children regularly play in the area and are exposed to the surface soils on a daily basis. Ten residential units reside on the known affected area, eight of which are known to be currently occupied. A vegetable garden of 0.1 acres has been maintained within the affected area for an unknown number of years, and residents throughout the neighborhood regularly consume produce from the garden.
- **Section 300.415(b)(2)(iv):** *“High levels of hazardous substances or pollutants or contaminants in soils largely at or near the surface, that may migrate;”* Sample analysis has shown that cPAHs exist in surface soils and the drainage ditch bank at concentrations above established RALs. Runoff from the site or washout of the drainage ditch bank will immediately enter Pinhook Creek. The property at Searcy Homes is regularly mowed and surface soils may become airborne, causing a threat of inhalation or ingestion of contaminated dusts.
- **Section 300.415(b)(2)(vii):** *“The availability of other appropriate federal or state response mechanisms to respond to the release;”* State funds are insufficient. No other governmental entity has funds available to conduct the necessary removal activity.

Next Steps

EPA’s Enforcement Section is preparing an assessment of liability and ability to pay on Potentially Responsible Parties (PRPs) related to the site. If it is determined that one or more PRPs are able to complete a removal action, ERRB may pursue an Administrative Order on Consent (AOC) with them to carry out the time-critical removal action and provide reimbursement for past costs.”^{xvii}

References Cited

- ⁱ T N Associates, 2008. Removal Site Evaluation Report, Huntsville Gas, Huntsville, Madison County, Alabama. ID No.: ALN000407462 Revision 1. October 19, 2008.
- ⁱⁱ USEPA, 2008. Pollution Report prepared by Matt Huyser, Sept 22, 2008.
- ⁱⁱⁱ U. S. Code Title 42, Chapter 103, Subchapter I, para 9607 a (2).
- ^{iv} GEI, 2001. Manufactured Gas Plant Sites in the State of Alabama. p. 95.
- ^v Browns, 1887-1955 Browns Directory.
- ^{vi} Deed.
- ^{vii} Truesdale, et al., 1988. U. S. Production of Manufactured Gases, Assessment of Past Disposal Practices. EPA/600/2-88/012. PB88-165970. February, 1988.
- ^{viii} 40 CFR Part 302, Table 302.4.
- ^{ix} USEPA, 1993. Fact Book< National Priorities List Under the Original Hazard Ranking System. EPA 540-R-93-079, PB93-963350. October 1993.
- ^x T N Associates, 2008. *Op. cit.*
- ^{xi} ADEM, 2006. CERCLA Site Inspection, Huntsville Gas Co.. Sept. 29, 2006.
- ^{xii} *ibid.*.
- ^{xiii} *ibid.*.
- ^{xiv} *Ibid.*.
- ^x ADEM, 2007.CERCLIS Site Investigation-2 Report. Huntsville Gas Company. September 25, 2007.
- ^{xvi} USEPA, 2008. *Op. cit.*.
- ^{xvii} *ibid.*.

Additional Materials Reviewed

Sanborn Maps 1898, 1901, 1908, 1913, 1921, 1928, 1949, and 1966.

GEI 2001. Manufactured Gas Plant Sites in the State of Alabama.

GEI site photographs taken during remediation.

Aerial Photos: March 23, 1942, February 27,1950, May 30, 1959, March 1, 1962, March 27, 1968, and February 6, 1971

EDR Aerial Photos, 1950, 1979, 1998, 2006.

USEPA, 2008. Memorandum from Ofia Hodoh to Matthew Huyser, August 19, 2008.

USEPA, 2008. Memorandum from Ofia Hodoh to Mathew Huyser, August 20, 2008.

GEI 2010. Remedial Action Work Plan, Huntsville Former Manufactured Gas Plant, Huntsville, Alabama. March 30, 2010.

III. Professional Background

I have a Bachelors of Science degree in Geology from Case Western Reserve University, Cleveland, Ohio, granted in 1968 and a Masters of Science in Environmental Geology, granted by Colorado State University in 1974.

Since the late 1970's, I have been involved in the investigation and remediation of sites contaminated by industrial activity. In 1981, I became project manager and Principal Investigator for the Broadhead Creek Site in Stroudsburg, Pennsylvania. This site was a former MGP and one of the first 100 sites listed on the NPL. Over the subsequent years, I have served as project manager for the investigation and remediation of a large number of MGPs. I have engaged in research for both the Electric Power Research Institute and the Gas Research Institute of various aspects of MGP site investigation and management. As part of my work, I have performed extensive studies of the literature concerning plant operations. I have also participated in the organization and management of four international conferences on MGP site management.

With regard to the CERCLA, since Broadhead Creek, I have worked on six MGP sites that have been on the NPL or have had the USEPA as the lead agency. As part of my work, I have kept abreast of USEPA policy with regard to contaminated sites. I am currently serving as an advisor on the Newtown Creek NPL site, and the Gowanus Canal NPL site. Both of these sites were recently added to the NPL and have MGP sites, among others, as potential sources of hazardous materials.

IV. Publications

- Unites, D.F., et al. 1980. Preliminary Risk Evaluation for Suspected Hazardous Waste Disposal Sites in Connecticut. In Management of Uncontrolled Hazardous Waste Sites, Hazardous Materials Control Research Institute, Silver Springs, Maryland.

- Unites, D.F., and Villaume, J.F. 1980. Techniques for Evaluating Surface and Ground Water Effects of Dry Ash Disposal. Proceeding of the Fourth Symposium on Fugitive Emissions, New Orleans, Louisiana, U.S. EPA (In Press).
- Unites, D.F., 1980. Methodology for Hazardous Waste Facility Siting. Presented at New England Water Pollution Control Federation Conference, Falmouth, Massachusetts, October 1980.
- Unites, D.F., Villaume, J.F., and Katz, P.B. 1980. A Case of Prediction Surface and Ground Water Effects of Dry Ash Disposal. Proceedings, Coal Technology '80, Houston, Texas, November 1980.
- Unites, D.F., Villaume, J.F., and Middlesworth, B.C. 1981. Use of a Batchwise Extraction Procedure for Coal Ash Disposal Evaluation. In Hazardous Solid Waste Testing: First Conference, ASTM Special Publication 760, Philadelphia, Pennsylvania.
- Unites, D.F., et al. 1981. Hazardous Waste Management in the Electronic Components Manufacturing Industry. Presented at the Third National Conference on Hazardous Waste Materials Management, Anaheim, California.
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- Unites, D.F. and Housman, J.J. 1982. Field Investigation and Remedial Action at Sites Contaminated with Coal Tars. Proceedings of the Fifth Annual Madison Conference of Applied Research and Practice on Municipal and Industrial Waste.
- Unites, D.F., et al. 1983. Air Pollution Damage to Man Made Materials; Physical and Economic Estimates. Electric Power Research Institute Report EA 2837.
- Unites, D.F., Villaume, J.F., and Lowe, P.C. 1983. Recovery of Coal Gasification Wastes: An Innovative Approach. Proceedings of the Third National Symposium on Aquifer Restoration and Ground Water Monitoring.

- Unites, D.F., Kebe, J.O. and Leonard, D. 1984. Hydrogeochemical Modeling of Fly Ash Disposal in a Limestone Quarry. Proceedings of the Triangle Conference on Environmental Technology.
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- Unites, D.F., et al. 1987. Management of Manufactured Gas Plant Sites, Volume II. Site Investigation. Gas Research Institute Report GRI 87/0260.2
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- Unites, D.F., Cornell, A. and Yarmac, R.F. 1993. Comparison of Ambient Air Quality Measurements at Five MGP Sites. Gas Research Institute Topical Report GRI 93/0353.
- Unites, D.F., Taylor, T., and Wargo, L.E. 1994. Volume Estimation Methods for Contaminated Soils at Manufactured Gas Plant Sites. Electric Power Research Insitute, Technical Report TR-103301.
- Unites, D.F. 1995. Environmental Impacts of Manufactured Gas Plant Demolition: Examples from Site Remediation Experience. Proceedings held in Prague for the International Symposium and Trade Fair on the Clean-up of Manufactured Gas Plants.
- Unites, D.F. 1996. Site Investigation Considerations. Proceedings of the 11th Annual MGP Conference of Contaminated Soils, University of Massachusetts at Amherst.
- Unites, D.F. 1996. American Experiences in the Site Investigation and Remediation of Manufactured Gas Plant Sites. Proceedings of the MGP Technical Meeting and Seminar in Copenhagen.
- Unites, D.F., Ripp J.A., Owen, S. 1996. Incidental Thermal Treatment and Reuse of Contaminated Soils. Proceedings held in Warsaw for the Third International Symposium and Exhibition on Environmental Contamination in Central and Eastern Europe.

- Unites, D.F. 1997. MGP Sites: How Utilities are Addressing the Problem. Proceeding of The Energy Daily conference in Orlando, Florida, on Negotiating Strategies for Environmentally-Impaired Utility Real Estate Assets.
- Unites, D.F. 1998. MGP Sites: An International Perspective. Proceeding of The Energy Daily and The Brownfields Report conference in Philadelphia, Pennsylvania, on Selling Environmentally Impaired Utility Real Estate Assets.
- Unites, D.F. September 1998. Site Remediation, Restoration and Reuse. Proceedings of the IBC Conference, Washington.
- Unites, D.F. 1999. What in the World Is Going On With MGP Sites? IGTs 12th International Symposium on Site Remediation Technologies & Environmental Management Practices in the Utility Industry, December 1999.
- Unites, D.F., Taylor, T., and McLellan, P. 2001. Air Monitoring at a Commercial Development Site. Gas Technology Institute Conference, December 2001.
- Unites, D.F. and Mauro, D. 2006. Manufactured Gas Plant (MGP) Air Monitoring Survey Report. EPRI, Palo Alto, CA; Northeast Utilities, Berlin, CT; Ameren Corporation, St. Louis, MO; and Public Service Company of New Mexico, Albuquerque, NM: 2006. 10010141.

V. Prior Testimony

I have served as an expert in the following cases:

Utah Power v. ESE Corp., et al. At issue was the effect of demolition and post-MGP operations.

Commonwealth of Massachusetts v. Blackstone Valley Electric. Testimony involved the appropriateness of remedial action performed by the state, and the nature of purifier material from MGPs.

WNG v. Advanced Ross, et al. While working for counsel for Fluor Daniel, Illinois Inc., an allocation was developed based on plant operations. Issues included changes in process during the plant history and the management of tar water emulsions.

EnergyNorth v. UGI. Issues involved the handling of tar water emulsions, process changes, and the prudence of removal actions.

City of West Allis, et al. v. WEPCO, et al. Issues in the case involved the production and disposal of purifier waste and the purification of manufactured gas using liquid scrubbers.

Piedmont Gas v. Duke Energy. As part of the allocation analysis, a model was developed to determine the effects of site demolition activities on the overall volume of contaminated soil.

VI. Compensation

My current billing rate is \$268 per hour.

This completes my report based upon the opinions I have been asked to render to date and based upon the documentation listed. I am prepared to render my opinions at trial.



Dennis F. Unites